**TEST REPORT**
**NON DESTRUCTIVE TEST**

**REBOUND HAMMER TEST RESULTS**

**Date: 24-04-2023**

**Name of Work**: PACKAGE NO.06 (CONSISTS OF 14 WORKS)

**Name of the Contractor**: Sri. M/s. SMLP Asphalts Prop. Sri B B Umesha

**Work Order No: MCTPL/BBMP/EE/BTY/PMC/P-3877/2022-23/QR**

**Job Code**: MCTPL/BBMP/EE/BTY/PMC/P-3877/2022-23/QR

**3rd & Part Bill**

| Sl. No. | Floor level / Structural Member /Identification | GRADE OF CONCRETE | Position / Elevation (Cm) | Rebound Hammer Number | Avg. Rebound Hammer Number | Compressive Strength of Concrete ($N/mm^2$) | Impact Direction |
|---|---|---|---|---|---|---|---|
| **Sample Tested Location: 20th Cross Road HMT Layout Opp. To # 275** | | | | | | | |
| 1 | Drain Wall | M20 | Location-1 | 28<br>32<br>30<br>32<br>28<br>32 | 30 | 22-24 | Horizontal |
| **Sample Tested Location: 20th Cross Road HMT Layout Opp. To # 275** | | | | | | | |
| 1 | Covering Slab | M20 | Location-1 | 24<br>26<br>24<br>26<br>24<br>26 | 25 | 20-22 | Vertical down |
| **Sample Tested Location: 20th Cross Road HMT Layout Opp. To # 879** | | | | | | | |
| 2 | Drain Wall | M20 | Location-2 | 30<br>28<br>30<br>28<br>32<br>32 | 30 | 22-24 | Horizontal |
| **Sample Tested Location: 20th Cross Road HMT Layout Opp. To # 879** | | | | | | | |
| 2 | Covering Slab | M20 | Location-2 | 26<br>26<br>24<br>26<br>26<br>26 | 26 | 22-24 | Vertical down |

Consultants

AR-09

BBMP

Assistant Executive Engineer
Vidyaranyapura Sub Division
B.B.M.P, Bangalore - 97

# Test Report
## Binder Content and Mix Gradation
### 3rd & Part Bill

| | |
|---|---|
| **Project Name** | PACKAGE NO.06 (CONSISTS OF 14 WORKS) |
| **Client** | Executive Engineer - Project Division Byatarayanapura |
| **Job No** | MCTPL/BBMP/EE/BTY/PMC/P-3877/2022-23/QR |
| **Mix Type** | Bituminous Concrete (BC) |
| **Contractor** | Sri. M/s. SMLP Asphalts Prop. Sri B B Umesha |
| **Test Method** | Specification for Road & Bridge Works, MORT&H, Revision V. |
| **Location** | Shiva Temple Road IECHS layout |
| **Material** | Bituminous Concrete mix |
| **Sample No** | 1 |
| **Date** | 24-Apr-2023 |

**Opp. To # 46**

| Sl. No. | Description | Unit | Computation | Test Result |
|---|---|---|---|---|
| 1 | Weight of Empty bowl before Extraction (E) | gm | Eb | 1080 |
| 2 | Weight of bowl + Sample before extraction | gm | $w_{sb}$ | 1742 |
| 3 | Weight of Sample taken for the test ($S_b$) | gm | $S_b = w_{sb} - Eb$ | 662 |
| 4 | Weight of bowl + Sample after extraction ($w_s$) | gm | $w_{sa}$ | 1706 |
| 5 | Weight of Sample after extraction (i.e. washed | gm | $S_a = w_{sa} - Eb$ | 626 |
| 6 | Weight of Filter paper before extraction ($F_b$) | gm | $F_b$ | 2 |
| 7 | Weight of Filter paper after extraction ($F_a$) | gm | $F_a$ | 3 |
| 8 | Weight of filler on filter paper ($F_d$) | gm | $F_d = F_b - F_a$ | 1 |
| 9 | Weight of Bitumen without considering Filter | gm | $W_b$ | 36 |
| 10 | Weight of the Bitumen with considering Filter | gm | $W_a = w_b + F_d$ | 37 |
| 11 | Percentage of the Bitumen (i.e. Binder | (%) | $W_a$/ SbX100 | 5.59 |

| Sl. No. | I.S. Sieve size (mm) | Weight Retained (gm) | Cum. Wt. Retained | Cumulative Percentage of weight retained (%) | Cumulative % of Passing | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | | | Test Result | Gradation Limits as per MORT&H | |
| 1 | 19 | 0 | 0 | 0 | 100 | 100 | Gradation satisfies the MORT&H Grade II Specification for Bituminous Concrete |
| 2 | 13.2 | 39.57 | 39.57 | 6.32 | 93.68 | 90-100 | |
| 3 | 9.5 | 112.57 | 152.14 | 24.30 | 75.70 | 70-88 | |
| 4 | 4.75 | 110.6 | 262.74 | 41.97 | 58.03 | 53-71 | |
| 5 | 2.36 | 73.65 | 336.39 | 53.74 | 46.26 | 42-58 | |
| 6 | 1.18 | 52.46 | 388.85 | 62.12 | 37.88 | 34-48 | |
| 7 | 0.6 | 43.54 | 432.39 | 69.07 | 30.93 | 26-38 | |
| 8 | 0.3 | 46.33 | 478.72 | 76.47 | 23.53 | 18-28 | |
| 9 | 0.15 | 53.62 | 532.34 | 85.04 | 14.96 | 12-20 | |
| 10 | 0.075 | 45.2 | 577.54 | 92.26 | 7.74 | 4-10 | |
| | Pan | 84.46 | | | | | |

**Mecadez Core Technologies Private Limited**

Authorised Signature

AR-09

Assistant Executive Engineer
Vidyaranyapura Sub Division
B.B.M.P, Bangalore - 97

# Test Report

## Binder Content and Mix Gradation

### 3rd & Part Bill

| | |
|---|---|
| **Project Name** | PACKAGE NO.06 (CONSISTS OF 14 WORKS) |
| **Client** | Executive Engineer - Project Division Byatarayanapura |
| **Job No** | MCTPL/BBMP/EE/BTY/PMC/P-3877/2022-23/QR |
| **Mix Type** | Bituminous Concrete (BC) |
| **Contractor** | Sri. M/s. SMLP Asphalts Prop. Sri B B Umesha |
| **Test Method** | Specification for Road & Bridge Works, MORT&H, Revision V. |
| **Location** | Shiva Temple Road IECHS layout |
| **Material** | Bituminous Concrete mix |
| **Sample No** | 1 |
| **Date** | 24-Apr-2023 |

**Opp. To # 26**

| Sl. No. | Description | Unit | Computation | Test Result |
|---|---|---|---|---|
| 1 | Weight of Empty bowl before Extraction (E) | gm | Eb | 1080 |
| 2 | Weight of bowl + Sample before extraction ($w_s$) | gm | $w_{sb}$ | 1749 |
| 3 | Weight of Sample taken for the test ($S_b$) | gm | $S_b = w_{sb} - Eb$ | 669 |
| 4 | Weight of bowl + Sample after extraction ($w_s$) | gm | $w_{sa}$ | 1713 |
| 5 | Weight of Sample after extraction (i.e. washed | gm | $S_a = w_{sa} - Eb$ | 633 |
| 6 | Weight of Filter paper before extraction ($F_b$) | gm | $F_b$ | 2 |
| 7 | Weight of Filter paper after extraction ($F_a$) | gm | $F_a$ | 3 |
| 8 | Weight of filler on filter paper ($F_d$) | gm | $F_d = F_b - F_a$ | 1 |
| 9 | Weight of Bitumen without considering Filter | gm | $W_b$ | 36 |
| 10 | Weight of the Bitumen with considering Filter | gm | $W_a = w_b + F_d$ | 37 |
| 11 | Percentage of the Bitumen (i.e. Binder Content) | (%) | $W_a$/ SbX100 | 5.53 |

| Sl. No. | I.S. Sieve size (mm) | Weight Retained (gm) | Cum. Wt. Retained | Cumulative Percentage of weight retained (%) | Cumulative % of Passing | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | | | Test Result | Gradation Limits as per MORT&H | |
| 1 | 19 | 0 | 0 | 0 | 100 | 100 | Gradation satisfies the MORT&H Grade II Specification for Bituminous Concrete |
| 2 | 13.2 | 38.35 | 38.35 | 6.06 | 93.94 | 90-100 | |
| 3 | 9.5 | 113.0 | 151.35 | 23.91 | 76.09 | 70-88 | |
| 4 | 4.75 | 110.6 | 261.95 | 41.38 | 58.62 | 53-71 | |
| 5 | 2.36 | 74.22 | 336.17 | 53.11 | 46.89 | 42-58 | |
| 6 | 1.18 | 51.52 | 387.69 | 61.25 | 38.75 | 34-48 | |
| 7 | 0.6 | 43.54 | 431.23 | 68.12 | 31.88 | 26-38 | |
| 8 | 0.3 | 46.33 | 477.56 | 75.44 | 24.56 | 18-28 | |
| 9 | 0.15 | 53.62 | 531.18 | 83.91 | 16.09 | 12-20 | |
| 10 | 0.075 | 48.24 | 579.42 | 91.54 | 8.46 | 4-10 | |
| | Pan | 89.58 | | | | | |

**Mecadez Core Technologies Private Limited**

**Authorised Signature**

Assistant Executive Engineer
Vidyaranyapura Sub Division
B.B.M.P, Bangalore - 97

# Test Report
## Binder Content and Mix Gradation
### 3rd & Part Bill

| | |
|---|---|
| **Project Name** | PACKAGE NO.06 (CONSISTS OF 14 WORKS) |
| **Client** | Executive Engineer - Project Division Byatarayanapura |
| **Job No** | MCTPL/BBMP/EE/BTY/PMC/P-3877/2022-23/QR |
| **Mix Type** | Bituminous Concrete (BC) |
| **Contractor** | Sri. M/s. SMLP Asphalts Prop. Sri B B Umesha |
| **Test Method** | Specification for Road & Bridge Works, MORT&H, Revision V. |
| **Location** | Shiva Temple Road IECHS layout |
| **Material** | Bituminous Concrete mix |
| **Sample No** | 1 |
| **Date** | 24-Apr-2023 |

**Opp. To # 49 Sai krupa House**

| Sl. No. | Description | Unit | Computation | Test Result |
|---|---|---|---|---|
| 1 | Weight of Empty bowl before Extraction | gm | Eb | 1080 |
| 2 | Weight of bowl + Sample before extraction | gm | $w_{sb}$ | 1750 |
| 3 | Weight of Sample taken for the test ($S_b$) | gm | $S_b = w_{sb} - Eb$ | 670 |
| 4 | Weight of bowl + Sample after extraction | gm | $w_{sa}$ | 1714 |
| 5 | Weight of Sample after extraction (i.e. | gm | $S_a = w_{sa} - Eb$ | 634 |
| 6 | Weight of Filter paper before extraction | gm | $F_b$ | 2 |
| 7 | Weight of Filter paper after extraction ($F_a$) | gm | $F_a$ | 3 |
| 8 | Weight of filler on filter paper ($F_d$) | gm | $F_d = F_b - F_a$ | 1 |
| 9 | Weight of Bitumen without considering | gm | $W_b$ | 36 |
| 10 | Weight of the Bitumen with considering | gm | $W_a = w_b + F_d$ | 37 |
| 11 | Percentage of the Bitumen (i.e. Binder | (%) | $W_a$/ SbX100 | 5.52 |

| Sl. No. | I.S. Sieve size (mm) | Weight Retained (gm) | Cum. Wt. Retained | Cumulative Percentage of weight retained (%) | Cumulative % of Passing | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | | | Test Result | Gradation Limits as per MORT&H | |
| 1 | 19 | 0 | 0 | 0 | 100 | 100 | Gradation satisfies the MORT&H Grade II Specification for Bituminous Concrete |
| 2 | 13.2 | 35.15 | 35.15 | 5.54 | 94.46 | 90-100 | |
| 3 | 9.5 | 110.5 | 145.65 | 22.97 | 77.03 | 70-88 | |
| 4 | 4.75 | 108.34 | 253.99 | 40.06 | 59.94 | 53-71 | |
| 5 | 2.36 | 72.6 | 326.59 | 51.51 | 48.49 | 42-58 | |
| 6 | 1.18 | 50.72 | 377.31 | 59.51 | 40.49 | 34-48 | |
| 7 | 0.6 | 44.65 | 421.96 | 66.56 | 33.44 | 26-38 | |
| 8 | 0.3 | 46.33 | 468.29 | 73.86 | 26.14 | 18-28 | |
| 9 | 0.15 | 53.62 | 521.91 | 82.32 | 17.68 | 12-20 | |
| 10 | 0.075 | 55.35 | 577.26 | 91.05 | 8.95 | 4-10 | |
| | Pan | 92.74 | | | | | |

**Mecadez Core Technologies Private Limited**

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# Test Report

## Binder Content and Mix Gradation

### 3rd & Part Bill

| | |
|---|---|
| **Project Name** | PACKAGE NO.06 (CONSISTS OF 14 WORKS) |
| **Client** | Executive Engineer - Project Division Byatarayanapura |
| **Job No** | MCTPL/BBMP/EE/BTY/PMC/P-3877/2022-23/QR |
| **Mix Type** | Bituminous Concrete (BC) |
| **Contractor** | Sri. M/s. SMLP Asphalts Prop. Sri B B Umesha |
| **Test Method** | Specification for Road & Bridge Works, MORT&H, Revision V. |
| **Location** | 3rd Cross Road |
| **Material** | Bituminous Concrete mix |
| **Sample No** | 2 |
| **Date** | 24-Apr-2023 |

**Opp. To # 47**

| Sl. No. | Description | Unit | Computation | Test Result |
|---|---|---|---|---|
| 1 | Weight of Empty bowl before Extraction | gm | Eb | 1080 |
| 2 | Weight of bowl + Sample before extraction | gm | $w_{sb}$ | 1752 |
| 3 | Weight of Sample taken for the test ($S_b$) | gm | $S_b = w_{sb} - Eb$ | 672 |
| 4 | Weight of bowl + Sample after extraction | gm | $w_{sa}$ | 1716 |
| 5 | Weight of Sample after extraction (i.e. | gm | $S_a = w_{sa} - Eb$ | 636 |
| 6 | Weight of Filter paper before extraction | gm | $F_b$ | 2 |
| 7 | Weight of Filter paper after extraction ($F_a$) | gm | $F_a$ | 4 |
| 8 | Weight of filler on filter paper ($F_d$) | gm | $F_d = F_b - F_a$ | 2 |
| 9 | Weight of Bitumen without considering | gm | $W_b$ | 36 |
| 10 | Weight of the Bitumen with considering | gm | $W_a = w_b + F_d$ | 38 |
| 11 | Percentage of the Bitumen (i.e. Binder | (%) | $W_a$/ SbX100 | 5.65 |

| Sl. No. | I.S. Sieve size (mm) | Weight Retained (gm) | Cum. Wt. Retained | Cumulative Percentage of weight retained (%) | Cumulative % of Passing | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | | | Test Result | Gradation Limits as per MORT&H | |
| 1 | 19 | 0 | 0 | 0 | 100 | 100 | Gradation satisfies the MORT&H Grade II Specification for Bituminous Concrete |
| 2 | 13.2 | 37.22 | 37.22 | 5.85 | 94.15 | 90-100 | |
| 3 | 9.5 | 116.32 | 153.54 | 24.14 | 75.86 | 70-88 | |
| 4 | 4.75 | 106.50 | 260.04 | 40.89 | 59.11 | 53-71 | |
| 5 | 2.36 | 74.00 | 334.04 | 52.52 | 47.48 | 42-58 | |
| 6 | 1.18 | 51.90 | 385.94 | 60.68 | 39.32 | 34-48 | |
| 7 | 0.6 | 43.54 | 429.48 | 67.53 | 32.47 | 26-38 | |
| 8 | 0.3 | 45.11 | 474.59 | 74.62 | 25.38 | 18-28 | |
| 9 | 0.15 | 53.62 | 528.21 | 83.05 | 16.95 | 12-20 | |
| 10 | 0.075 | 66.25 | 594.46 | 93.47 | 6.53 | 4-10 | |
| | Pan | 77.54 | | | | | |

**Mecadez Core Technologies Private Limited**

**Authorised Signature** AB-09

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# Test Report

## Binder Content and Mix Gradation

### 3rd & Part Bill

| | |
|---|---|
| **Project Name** | PACKAGE NO.06 (CONSISTS OF 14 WORKS) |
| **Client** | Executive Engineer - Project Division Byatarayanapura |
| **Job No** | MCTPL/BBMP/EE/BTY/PMC/P-3877/2022-23/QR |
| **Mix Type** | Bituminous Concrete (BC) |
| **Contractor** | Sri. M/s. SMLP Asphalts Prop. Sri B B Umesha |
| **Test Method** | Specification for Road & Bridge Works, MORT&H, Revision V. |
| **Location** | 3rd Cross Road |
| **Material** | Bituminous Concrete mix |
| **Sample No** | 2 |
| **Date** | 24-Apr-2023 |

**Opp. To # 17**

| Sl. No. | Description | Unit | Computation | Test Result |
|---|---|---|---|---|
| 1 | Weight of Empty bowl before Extraction (E) | gm | Eb | 1080 |
| 2 | Weight of bowl + Sample before extraction | gm | $w_{sb}$ | 1741 |
| 3 | Weight of Sample taken for the test ($S_b$) | gm | $S_b = w_{sb} - Eb$ | 661 |
| 4 | Weight of bowl + Sample after extraction | gm | $w_{sa}$ | 1706 |
| 5 | Weight of Sample after extraction (i.e. | gm | $S_a = w_{sa} - Eb$ | 626 |
| 6 | Weight of Filter paper before extraction ($F_b$) | gm | $F_b$ | 2 |
| 7 | Weight of Filter paper after extraction ($F_a$) | gm | $F_a$ | 3 |
| 8 | Weight of filler on filter paper ($F_d$) | gm | $F_d = F_b - F_a$ | 1 |
| 9 | Weight of Bitumen without considering | gm | $W_b$ | 35 |
| 10 | Weight of the Bitumen with considering | gm | $W_a = w_b + F_d$ | 36 |
| 11 | Percentage of the Bitumen (i.e. Binder | (%) | $W_a$/ SbX100 | 5.45 |

| Sl. No. | I.S. Sieve size (mm) | Weight Retained (gm) | Cum. Wt. Retained | Cumulative Percentage of weight retained (%) | Cumulative % of Passing | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | | | Test Result | Gradation Limits as per MORT&H | |
| 1 | 19 | 0 | 0 | 0 | 100 | 100 | Gradation satisfies the MORT&H Grade II Specification for Bituminous Concrete |
| 2 | 13.2 | 32.54 | 32.54 | 5.20 | 94.80 | 90-100 | |
| 3 | 9.5 | 106.20 | 138.74 | 22.16 | 77.84 | 70-88 | |
| 4 | 4.75 | 111.52 | 250.26 | 39.98 | 60.02 | 53-71 | |
| 5 | 2.36 | 73.65 | 323.91 | 51.74 | 48.26 | 42-58 | |
| 6 | 1.18 | 50.40 | 374.31 | 59.79 | 40.21 | 34-48 | |
| 7 | 0.6 | 44.65 | 418.96 | 66.93 | 33.07 | 26-38 | |
| 8 | 0.3 | 46.33 | 465.29 | 74.33 | 25.67 | 18-28 | |
| 9 | 0.15 | 53.62 | 518.91 | 82.89 | 17.11 | 12-20 | |
| 10 | 0.075 | 68.35 | 587.26 | 93.81 | 6.19 | 4-10 | |
| | Pan | 73.74 | | | | | |

**Mecadez Core Technologies Private Limited**

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